

DAY II**9:00 A.M. - 4:00 P.M.**

- Agenda Preview and Introductions
- Emissions Controls, continued (Question 32)
- Introduction to Modeling (Questions 11,35...)

12:00 - 1:00

- Lunch Break
- Modeling, Continued
- Wrap Up - Preparing For June 20 Meeting - Where Are We And What's Next?

(* Question Numbers from the List Generated by Stakeholders at May 6-7 Meeting and Revised by the Data Advisory Committee)

**E.H. Pechan & Associates, Inc.**

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May 13, 1996

Mr. J. Wick Havens
Pennsylvania Department of Environmental Protection
P.O. Box 2357
Harrisburg, PA 17105-2357

SUBJECT: Southeast Pennsylvania Ozone Stakeholders Group Emissions Data Review

Dear Wick:

This letter addresses how the emission estimates presented by Pechan at the May 7th Stakeholders meeting compare with those in the September 1994 report by Energy and Environmental Analysis, Inc and the American Automobile Association (AAA).

1. The emissions data presented by Pechan at the May 7th meeting were all representative of 1990 typical summer day conditions. The AAA report includes emission estimates for 1970, 1980, 1996 and 2005. Thus, we are presenting data for different years.
2. When Pechan reports motor vehicle emissions, this includes passenger cars (light-duty vehicles), light-duty trucks, and heavy-duty trucks (gasoline and diesel). The pie charts in the AAA report list light-duty vehicle and light-duty truck emissions explicitly, and heavy-duty truck emissions as part of other mobile emissions. Therefore, our motor vehicle emissions total would be expected to be greater than the sum of LDV plus LDT emissions from the AAA report.
3. The *Other Mobile* category in the AAA report contains emissions from heavy trucks and nonroad engines/vehicles. *Stationary* contains everything else. Therefore, the sum of autos, light trucks, and other mobile from the AAA report should equal the sum of motor vehicles and offroad from our 1990 emission estimates (if they had analyzed 1990 emissions). The stationary source category in the AAA report should be comparable to the sum of area source and point source emissions from our values.
4. The AAA report does not include biogenic emissions.

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5. The authors of the AAA report say that the 1996 VOC emission estimates are based on the emission estimates available two years ago from the Philadelphia rate-of-progress plan. Apparently, though, EEA was unable to obtain 1996 VOC emission estimates for the New Jersey portion of the nonattainment area. Because they could not get 1996 point source emission estimates for New Jersey, they used 1990 data adjusted by the average percentage change from 1990 to 1996 for the other eight areas included in the study. It is also possible that the AAA report used a different nonattainment area definition (smaller area) than the four State official area.

If you want to compare common years, it would be helpful if I could obtain the rate-of-progress plans for the nonattainment area. Then, at least, we can compare 1996 values. The attached Table 1 uses the AAA report source category reporting conventions to compare 1996 emission estimates from the AAA report with the 1990 emission estimates that were presented at the May 7th meeting. The biggest discrepancy in the Table 1 comparison is in automobile versus stationary source VOC emissions. While auto emissions would be expected to be lower in 1996 than in 1990, autos would still probably be more than 10 percent of the man-made emissions total in 1996.

Please call me at extension 102 with any questions about this analysis.

Sincerely,



Jim Wilson

cc: Bob Kaiser, COMSIS

Table 1
Anthropogenic VOC Emissions Comparison

	AAA Report 1996*	1990 OTAG/ SIP Inventory
Autos	7%	26%
Light Trucks	4%	6%
Other Mobile	19%	17%
Stationary	70%	51%

NO_x Emissions Comparison

	AAA Report 1996*	1990 OTAG/ SIP Inventory
Autos	13%	18%
Light Trucks	7%	4%
Other Mobile	34%	21%
Stationary	46%	57%

***SOURCE:**

Clearing the Air - A Report on Emission Trends in Selected Cities, Prepared by Energy and Environmental Analysis, Inc., Arlington, VA for the American Automobile Association, September 1994.

Draft Agenda

SOUTHEAST PENNSYLVANIA STAKEHOLDER WORKING GROUP

June 20-21

Day I

Preliminary Matters - Meeting Summary, etc.

Develop Evaluation Criteria - Stakeholder Discussion

Present Additional Information

- DEP's Attainment Recap
- S.T. Rao's Approach to Attainment

Discussion - Stakeholders

Day II

Continue Examining Emission Controls

- Transportation and Transit Plans
- Land Use
- Emissions Trading

Discussion - Stakeholders

Public Involvement

Wrap-up and Preparation for July 8-9

SOUTHEAST PENNSYLVANIA OZONE STAKEHOLDER WORKING GROUP
Draft Meeting Summary
May 30 & 31, 1996

9:00 A.M. - 4:00 P.M., Holiday Inn, 4th & Arch, Center City, Philadelphia

Day 1

Morning Session:

I. Overview of Relevant Current Events, Jim Rue, Deputy Secretary, DEP.

Jim Rue opened the meeting with a brief review of current events relevant to the Stakeholders, which included the opening of the Ozone Action Days in Philadelphia on May 20. He also announced that a settlement had been reached in the law suit against the EPA by the Clean Air Council, noting that this settlement was an example of the private sector and government working together to find solutions. He also mentioned the progress of OTAG (Ozone Transport Advisory Group), in focusing on ozone reductions, particularly in NOx, in the 37 state region. At the OTAG meeting, Governor Ridge called for a move away from an incremental approach to reductions for precursors. Jim Rue proceeded to discuss the role of FERC (Federal Energy Regulatory Commission), and its recent proposals for deregulating the electric power grid throughout the country. Noting the possibility of the adverse environmental effects from deregulation due to the potential for increased NOx emissions, he stated DEP's position that the President's Council on Environmental Quality (CEQ) should assess the deregulation's environmental impact.

He concluded by stating that there has been good movement on the national front to control both NOx emissions and transport issues to help the Stakeholders with their mandate.

II. Review of May 6 & 7 Meeting Summary, Schedule and Announcements.

Mike Hughes asked Stakeholders to recommit to the ground rules in the Operating Agreement, particularly requesting that at this stage in the process Stakeholders focus on educating rather than advocating particular positions.

The Stakeholders approved the May 6 & 7 meeting summary and agreed that it be made available for distribution.

III. Emission Inventories.

Topic 1: Ozone Precursor Emission Inventories: Jim Wilson, E.H. Pechan & Associates

Jim Wilson started with a presentation of emission inventories for the Philadelphia-Wilmington-Trenton non-attainment area and surrounding states using data from the 1990 Ozone Transport Assessment Group data base. Emission inventories from 1990 were then compared to VOC and NOx emission projections for the five county Pennsylvania portion of the non-attainment area by point, area, non-road engine vehicles and highway sources. The discussion that followed centered on the discrepancies

between the 1990 data and the emission projections for 1996 and 2005. Jim stated that the estimates were from different databases each designed for different purposes. Furthermore, projected reductions summarized for 1996 and 2005 were offset by growth factors and should not correlate exactly.

To this discussion, Jim Rue added that an inherent level of uncertainty exists in the modeling and resulting projections generated from it. Because of this uncertainty, the approach taken by DEP was to provide the Stakeholders with all available data and to let them decide as a group the appropriate working assumptions behind selected attainment strategies. Wick Havens added that one of the problems in modeling ozone is the meteorology which plays a role in its formulation. He also stated that emissions and ozone are not correlated one to one--further adding to the problem of modeling. From the discussion that followed, Stakeholders expressed the desire for a single set of emission estimates through the year 2005.

Afternoon Session:

IV. Emissions Control Strategies from Neighboring States.

Topic 1: New Jersey: Chris Salmi, New Jersey DEP.

Chris Salmi presented an overview of clean air act implementation strategies for New Jersey in dealing with its non attainment areas. These efforts include a combination of federal measures, stationary and mobile source measures, and attainment planning. Federal measures include Tier 1 motor vehicle standards, a program using reformulated gasoline for the entire state, and proposed regulations for consumer products (aerosols, deodorants etc.) AIMS coatings, auto body refinishing and off-highway emissions sources. The state's efforts to reduce stationary emissions include New Source Review, VOC and NOx RACT (Reasonable Available Control Technologies), operating permits, OTC NOx MOU, an open market trading program and rules for consumer products. New Jersey's mobile source strategies incorporate a hybrid state administered and private sector I/M program, a clean fleet program, transportation control measures coupled with employer trip reduction and an OTC LEV program. Attainment planning in the state focuses on reductions in localized VOC peak values and regional NOx reductions to meet the health standard. The states attainment plan follows a two phase approach with revised attainment demonstration due by mid 1997.

He concluded by stating without a high-enhanced I&M program, New Jersey will not be able to meet the 1996 EPA standards. These standards can be reached by 1999.

Topic 2: Maryland: Diane Franks, Maryland DEP.

Diane Franks presented a history of Maryland's early efforts to come into compliance with the Federal Clean Air Act and its Amendments. She noted several implementation problems with the submitted 15% reduction plan, including an unprepared public for a move to Enhanced I/M, the lack of neighboring states implementation of CAA required measures, delays in both the enforcement of federal rules and the state legislature in starting the Enhanced VEIP. As a result, the state developed an interim program which

incorporates a basic idle test, requests for voluntary IM240 tests for private vehicles and requires IM240 testing for state fleets. Evaporative (purge and pressure) tests were delayed because of public concern. As a confidence building measure, Maryland formed Stakeholder groups to select an I/M program and preferred attainment strategies. Selected measures from the group included voluntary measures such as Ozone Action Days and outreach programs to increase public awareness and a hybrid I/M program with centralized testing and decentralized repair.

Maryland's VEIP plans for the coming year are limited to non-intrusive measures as a result of public reaction. These measures include improving customer service and VEIP stations, improving public outreach, encouraging more IM240 volunteers, initiation of non-intrusive gas cap check, training opportunities for repair technicians and working groups to study mandatory repair certification for technicians.

In concluding, she stated that Maryland's progress has been substantial given the progress of other states. The state has implemented local control measures and will reconvene the 15% plan task force to discuss further attainment strategies.

V. SIP Summaries and Rate of Progress Plans (15% and 3%): Wick Havens, DEP

Wick Havens gave a history and review of the Pennsylvania SIP. The mandated approach is to achieve an initial 15% reduction from 1990 baseline emissions and achieve a 3% reduction each year over a three-year period. The SIP submitted for public comment on August 16, 1996 will assume high-enhanced I&M and will not demonstrate attainment. He stated that submittal of the SIP is an effort to avoid the Federally mandated sanctions and is expected to be amended as the Stakeholders formulate attainment strategies.

VI. Mobil Source Modeling and Drive Cycle Issue Information Requests: Bob Kaiser, COMSIS.

Bob Kaiser addressed requests for information on selected mobile source emissions. Presented results showed that LDGV's (Light Duty Gas Vehicles) produced 84% of VOC's and 77% of NOx of the total on-highway emissions. VOC emissions for LDGV's slope downward until 50 mph to 55 mph where they gradually increase. NOx emissions for this vehicle class were higher at very slow speeds (under 15 mph) and over 45 mph. For this class of vehicles, the highest emissions occur at extremes of speed ranges. As a result, LDGV emissions are minimized when traffic flow is smooth, and a speed of 15-30 mph is achieved for NOx and a speed of 45-55 mph is achieved for VOC's. Findings showed that 1/3 of emissions in a typical trip occur when the vehicle is started and that emissions are therefore best minimized by reducing the number of vehicle trips.

Addressing the relationship between NOx emissions and HDDV (Heavy Duty Diesel Vehicles), his presentation showed HDDV's produce six to fourteen times more NOx per mile than LDGV's. These emissions increase dramatically at speeds in excess of 45 mph and dramatically decrease at speeds under 20 mph.

Day 2

Morning Session:

I. Mobil Source Modeling and Drive Cycle Issue Information Requests, cont.: Bob Kaiser, COMSIS.

Bob Kaiser proceeded to address the findings on emissions and traffic signal synchronization. Presented results showed only small emission decreases from these measures. Of this decrease, the largest impact was derived from synchronization of the most congested arterials--those that raised the driving speed and followed the decreasing emissions curve from 0-25 mph. Emissions reductions require this average speed over a sufficient distance to be achieved. He noted that research efforts regarding the emission reductions from signal synchronization are still incomplete and are on going. Presently, these efforts rely on average speed only, while research to incorporate drive cycle data is on going.

Bob concluded by providing an overview of I/M programs, starting with a discussion of testing issues and standard determinants, associated reductions and a listing of possible I/M options for the five-county Philadelphia non-attainment area.

II. Modeling Ozone: Dr. Panos Georgopoulos, Ozone Research Center, Rutgers University

After an overview of the atmospheric chemistry behind ozone formulation, Dr. Georgopoulos explained the details of modeling the variety of inputs to project ozone formulation. The inputs are based on emission estimates gathered by state and federal agencies, as well as from historical meteorological data trends. He noted that there is fundamental agreement between the various agencies and the scientific community with the underlying science and methodology used in the model. He added that while the model uses the 1990 database as a starting point, changes in emissions from regulations, technology or other reasons are input into the model to reflect changes from baseline estimates.

He presented a graph that demonstrated the complex, nonlinear relationship among NOx, VOC and ozone, pointing out the uncertain impact on ozone levels from local NOx and VOC reductions.

From the discussion generated from the presentation, he pointed out that it is prohibitively expensive to test each control option individually to determine its attainment benefit. Instead, several different scenarios can be evaluated by quantifying the reductions associated with a package of control measures and running them through the model. The modelling comparison between sets of control measures is particularly useful where the proposed strategies are radically different from those already represented as inputs. He also pointed out that EPA requires attainment strategies to be submitted with an accompanying modeling result.

In concluding, he stated that there was a synergy between transport and locally produced ozone, adding that if pollution controls are not produced upwind, the impact of attainment strategies will have minimal effect.

Afternoon Session:

III. Projections in Regional Growth: Ron Roggenburk, DVRPC.

Ron Roggenburk presented regional growth projections estimated by the Delaware Valley Regional Planning Commission. These estimates include an increase in the number of jobs in the region by 6% between 1990 and 2020, a net increase in total vehicles in the five-county Philadelphia non-attainment area (Pa. portion only) of 18% and an increase in vehicle ownership. He presented survey results in which respondents were asked to identify the single most important issues facing the region. Survey results showed that 33.8% of respondents named environmental issues and 18.2 named transportation issues, collectively these two categories represent 52% of the respondents concerns.

In concluding, he briefly discussed how projects and activities get included in the regional emissions analysis done by DVRPC and finished his presentation with an introduction to the Ozone Action Partnership, a low cost, voluntary reduction program and educational campaign to reduce emissions during peak ozone days.

IV. Ozone Precursors and Inventory of Available Options: Jim Wilson, E.H. Pechan & Associates, Inc..

Jim Wilson presented the legal requirements of the Federal Clean Air Act and its associated Amendments. These included attainment strategies in: National measures, motor vehicles, NESHAP (National Emissions Standards for Hazardous Air Pollutants, petroleum refinery MACT standard requirements, and acid rain in the 1990 CAAA. He stated that the EPA requires demonstrated attainment and maintenance by modeling. In addition, EPA requires that there be no recorded exceedances for a period of three years on the ground.

IV. Meeting Evaluation and Next Steps:

The May 30 & 31 Stakeholder meeting concluded with suggestions to improve subsequent meetings. Stakeholders agreed that a single set of numbers was needed for emission inventories. It was suggested that this source be the Pa. SIP numbers. Stakeholders were given work sheets to begin to generate a list of attainment strategies and evaluation criteria for presentation at the next Stakeholders meeting. Suggested areas to improve future meetings included the Stakeholders need to know what attainment strategies may be off limits for consideration, legal opinions on what voluntary efforts ~~EPA~~ will receive credit by EPA and any relevant restrictions in Pa. State law. Other suggestions included that data for presentation be kept consistent, that hand outs have page numbers, name of the presenter, and a list of assumptions underlying the major findings. Finally, Stakeholders agreed that they need time at the next meeting for discussion, rather than presentation, and need to return to small breakout groups in the next meeting.

The next meeting will be June 20 and 21 at the Holiday Inn 4th & Arch.

SPOS961

8/8/96

To: Southeast Pennsylvania Ozone Stakeholders (SPOS)

cc: Roy Cornell
& Chuck Marsh

From: Francis W. Jackson

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Subject: Information and recommendations for SPOS.

Recommendations - Process:

1. Correlate ozone levels (for ozone exceed times) with weather & pollution (entry into the atmosphere time and location) information.

2. Determine the significant contributors, when (hourly basis) and where significant, to ozone levels for periods when ozone levels exceed standards. Obtain weighted (for time and entry location) and unweighted values for various pollutions and categories of contributors e.g., % of the NOx concentration (ppm) on at risk days, at hours it is significant to causing the standard to be exceeded) and the effect on ozone level.

3. Using the information in 1&2 above and weather forecasts predict likely exceed day locations and major contributors' significant locations and times of entry into the atmosphere; and devise effective and cost effective voluntary and mandatory actions to substantially reduce the number of and severity of ozone exceeds - but only what is significant, cost effective and only at the necessary time (hourly) and place!

4. Determine the most effective and cost effective actions (at a society level - near term and down the road actions; includes re-evaluation of existing plans as future plans change the "environment", i.e., if effective actions negate the need for current not very effective and not cost-effective actions admit they are not longer required and remove them, e.g., will auto catalysts be required in all/any areas after NOx is substantially lowered?) and devise a plan for getting the necessary parties to accomplish the actions (State Govts, Fed. Govt, Industries, Communities, Individuals, etc.).

Recommendations - Specific Actions:

1. Correlate existing weather data with ozone levels, gather additional weather/ozone data as necessary and develop a reasonably accurate ozone predictor based on weather and pollution source predictions. Some of this information is contained in " Analysis of

